ACCOUNT OF AN EPIDEMIC RESEMBLING DENGUE,

WHICH OCCURRED IN AND AROUND CHARLOTTESVILLE AND THE UNIVERSITY OF VIRGINIA, IN JUNE, 1888.

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On Tuesday, June 5, 1888, I was called to see Herbert P., six years old; he had been taken suddenly a few hours before with violent pain in the left side of the chest nearly over the region of the heart. His temperature was 103°, and the skin extremely hot and pungent to the touch; his bowels were rather constipated, but not markedly so; there was no nausea, but very little appetite. His chief complaint was of the pain in the chest, which was excruciating and aggravated by the slightest movement, or by drawing a long breath. Nothing abnormal could be discovered about the thoracic organs, however, on physical examination. One grain of antipyrine was given every two hours until the temperature fell to 100° or the pain was relieved, and one grain of calomel was ordered every four hours. A mustard plaster was applied to the chest and strict quiet was enjoined, though this was scarcely necessary on account of the increase in the intensity of the pain with every movement.

On my visit the next day, I found this patient apparently entirely well, but two other members of the family, aged respectively eight and three years, had violent pain in the left side of the chest, and over the region of the stomach; the pungent heat of skin was very marked in both of these cases; the temperature in each rose to a little over 103° at noon, but was only about 101° at 6 P.M. and there was some sweating, but, singularly enough, the extreme heat of skin was very marked.

By the next day both of these children were well, but two others in the same family were sick; one of them was affected precisely as the others had been, but the other, a little boy about a year old, presented different symptoms. In his case there were two or three attacks of what I suppose from his mother's account was spasm of the glottis followed by alarming prostration. The spasm and difficulty of breathing had passed off before I saw him, but he was still very prostrate, his pulse being 128 and feeble. The prostration lasted forty-eight hours and passed off with profuse vomiting.

There were in this family six children, five of whom had the disease; one, a little girl nearly seven years old, escaped, though she remained constantly with the sick children. (It may be well enough to mention that this little girl who escaped had whooping-cough just a year before, and that, during a violent fit of coughing, she was taken with right hemiplegia and aphasia; she gradually recovered from this, and in the course of two months was apparently well, but a few weeks prior to the appearance of the epidemic she complained of severe headache and of numbness in the right hand and arm, and there was a very marked tendency to call things by the wrong names, and often she could not express herself at all; this lasted only a day or two, and she seemed perfectly well when the epidemic broke out.)

On June 8th, I was called to see a colored girl about seventeen years old; her temperature was 103.6°, her respiration rather quickened, her pulse 90, the skin very pungently hot, and the tongue slightly coated; she had very little appetite, and her bowels had not moved for forty-eight hours; she complained of pain in the left side over the region of the heart, and of some pain in the shoulder on the same side; the pain was aggravated by movement. The attack in this case came on a few hours before I saw the patient, the first symptom being pain in the side which was quickly followed by fever. There was no enlargement of the spleen that I could detect, nor was the liver affected in any way. I was told that there had been three other cases almost precisely like this one in the same family. One of them, a boy fourteen years old, was still suffering with the pain and some fever, but at the time I saw him his temperature was only 101.5°; the other two children had recovered. I did not see these cases again, but was told that both of those who were sick at the time of my visit were well the next day.

The next case was a young man about twenty years old, a student in the University of Virginia; he was taken suddenly with violent pain in the left side of the chest, which was aggravated by movement or by drawing a deep breath; indeed, ordinary inspiration caused such acute pain that his respirations were shallow and hurried. He informed me that he was taken with slight chilliness, and then the pain and a feeling of constriction across the chest; his temperature was 103.8°, his pulse 100; physical examination revealed nothing abnormal about his thoracic organs; his appetite was poor, but there was not complete anorexia; his bowels were slightly constipated, but this, he told me, was his habit. Turpentine stupes were applied over the seat of pain and fifteen grains of antipyrine were given by the mouth. At 9 o'clock the next morning the pain was very much better—in fact, there was *no* pain except on motion—and his temperature was 99°; he was given five grains of quinine every two hours until twenty grains had been taken, and was kept in bed. At 1 o'clock P. M., there was a recurrence of the pain and fever just as they had appeared on the previous day, but antipyrine afforded prompt relief to both. At 6 P. M., his temperature was 101° and the pain was only appreciable on movement. These daily exacerbations continued for six days, but becoming less intense each day.

These cases will give a fair idea of the epidemic as it prevailed in and around Charlottesville, Virginia, and the University of Virginia. It is unnecessary to report more of the cases in detail, but I shall refer to others later, in order to illustrate certain features of the disease.

It may be well enough to state, before going further, that malarial affections are practically unknown in this section of Virginia.

The number of cases which I saw during the first ten days of the epidemic was twenty-nine, and of these I took full notes. I saw at least as many more subsequently, but, being extremely busy with the final examinations of the medical students, did not take notes of them.

The disease, as will be seen from what I have already stated, was distinctly *epidemic*. It was *not contagious*, or, if so at all, only in a very slight degree. I shall give my reasons for this opinion further on.

Two of my colleagues in the University of Virginia, Dr. Cabell and

Dr. Towles, saw cases of the disease, and Drs. Randolph, R. W. Nelson, H. T. Nelson, Magruder, Flannagan, and others, of Charlottesville, had abundant opportunities for observing the affection, and all agree that it is a disease with which they had not previously met, and which had not been described.

I propose now to describe the characters of the disease as I saw it.

1. ONSET.—In every case which I saw the onset was *sudden*, and usually violent. One little girl, about ten years old, the daughter of one of my colleagues, was taken suddenly, on her way home from church, with violent pains in the side, and within fifteen minutes there was very decided heat of skin. In another instance the pain came on so suddenly that the parents of the child did not credit her complaints until the fever came on half an hour afterward, and was attended with so much stupor as to occasion great alarm.

2. SYMPTOMS.—In every instance pain was one of the first, if not the first symptom, and the rise of temperature appeared shortly thereafter. It will be well, however, to examine the different symptoms in detail.

a. The nervous system. In two cases there was a severe chill, which immediately preceded the pain, and in several others there was chilliness. The pain, however, was, by far, the most striking feature as far as the nervous symptoms were concerned. In *character* it was usually sharp and lancinating, and was much more violent when the patient attempted to move or to draw a deep breath. (So agonizing was this pain that it was nicknamed the "devil's grip" by a sufferer from the disease in Rappahannock County, Virginia, and this name became a common one there afterward, as I was told by Dr. W. F. Cooper.) There was slight tenderness over the seat of pain in every case, but it was not nearly so marked as the pain itself. The *seat* of the pain was usually in the left side of the chest just below the nipple, but in some of the cases there was pain in the opposite side, or in the shoulder of the opposite side; and in a few of the cases, especially in children, there was pain in the abdomen, usually in the epigastric region. In three of the twenty-nine cases the pain changed from one point to another; in the case of one of my own children, for example, the pain was first in the left side, and was attended with a temperature of 103°; this lasted for twenty-four hours, when they both subsided; some hours later there was a sharp attack of pain in the right side, without rise of temperature.

Headache occurred in nearly every case and was usually severe. *Backache* was present in about half of the cases. There was no aching in the limbs, as a rule, even when the temperature was high, though it was occasionally present.

b. The circulatory system. The pulse was always increased in frequency, ranging usually from 90 to 110; in the cases of some of the children it sometimes reached 120 or even a little greater degree of frequency. Physical examination of the chest revealed nothing abnormal in the condition of the heart itself.

c. The respiratory system. The respirations were slightly increased in frequency in every case, and were rather shallow, but this increase seemed to be due entirely to the pain caused by drawing a deep breath. There was no cough, and no expectoration, nor were any evidences of disease to be found on physical examination. In two cases—the patient in each being a young adult—there was a feeling of great constriction of the chest. In one case—that of a child a year old which I have previously mentioned—there was, I suppose, from the account which I obtained from the mother, some spasm of the glottis, but I did not see the child during any of the attacks.

d. The digestive system. The digestive symptoms were, as a rule, not marked. In nearly all of the cases the appetite was poor, but in only two or probably three was there complete anorexia; thirst was always complained of during the febrile stage. Vomiting occurred in four cases, but in no case was it persistent or troublesome, and in two cases (children) it occurred just at the close of the fever, the patient having a profuse sweat and falling into deep and refreshing sleep immediately afterward. As a rule, there was slight constipation, and in two cases this was quite troublesome, but in a few cases there was slight diarrhœa; in two cases, indeed, the diarrhœa was quite severe, but I think it probable that it was due in each instance to some imprudence in diet. In the case of a little boy, four years old, there was violent spasm of the intestines, which could be distinctly felt through the abdominal walls during the paroxysms as hard knots.

e. The temperature. In every instance there was more or less fever usually ranging from 102° to 104°. In but one case was the temperature below 101°. And even in that it is probable that the temperature had been higher for a short time before I saw her. The striking features about the temperature were its rapid rise and its short duration. In every case, so far as I could ascertain, the fever attained its maximum within an hour of the time that the pain was first felt, and in only three cases did it last more than twenty-four hours. It is worthy of note that in each of these three cases the patients were fatigued by hard study. In two of these cases the fever was intermittent in character and came on at about the same hour each day; in the third it was remittent. None of these three patients, who were students of the University of Virginia, had ever suffered from malaria; one was from Portland, Oregon; one from near Bristol, Tennessee; and the third from Loudon County, Virginia

f. The cutaneous system. I have already mentioned the most prominent of the cutaneous symptoms—the pungent heat of skin. I have never seen this more marked in scarlet fever than it was in some of these cases, and in one instance, a lady who had nursed scarlet fever patients expressed great anxiety lest she might again have to contend with this disease, her apprehensions being caused by the extreme heat of the skin. Even when there was some perspiration this heat of skin was marked. During the earlier hours of the attack the skin was dry, but later on, usually about ten or twelve hours after the outset, there was some perspiration and occasionally a very profuse sweat.

g. The urinary organs. In none of my cases was there any evidence of disturbance of the urinary organs, except a slight diminution in the quantity of urine discharged and a slightly darker color than normal—changes which are common to all forms of fever. No chemical examination of the urine was made, however, except for albumin.

3. CAUSES.—The first question which demands an answer is—Is this disease contagious? And it is not easy to give a positive answer at present. It will be observed that there were five cases in one family (of six children), and four cases in another family; in a third family all the children, four in number, had the disease, and it is especially worthy of note that the four children just mentioned had dengue in Texas a year or two ago. As a general rule, it attacked *all* of the *children* in a family. But in a very large proportion of the cases which I saw there was *no* evidence of contagion. Sixteen of the twenty-nine patients were students in the University, and among these sixteen there was not a single instance in which the disease could be fairly attributed to contagion.

In one house containing eight large rooms there were sixteen students; these young men were constantly together and yet there was but *one* case in that house. In another similar building there were two cases.

It may be stated briefly that the cases among the students were scattered in different parts of the University buildings, some of which are half a mile apart, there being generally but one or two sick men in each neighborhood. Nor could the extension of the disease be traced to the association of the students in the different classes. For example, three of the patients were medical students, five were law students, one was studying civil engineering, and seven were students in the different academic schools. The disease then, if contagious at all, would seem to have been far less so than most of the contagious diseases.

Age was undoubtedly a predisposing cause; it was far more common among children than among adults. I saw no case among the adults in those families in which the children were sick with the disease. This, it will be observed, is entirely different from dengue as it prevailed in Texas and other southern States some years ago. The weather was unusual for the month of June at the time of the first appearance of the epidemic; both days and nights were cooler than usual at that season of the year—the nights being relatively much cooler than the days.

No causative connection could be traced between the previous condition of health and the attack, in any case; but among the students those who were broken down by hard study had the disease in a much more troublesome and intractable form than their less studious fellows.

There was nothing in the immediate surroundings of the patients which could have caused the disease. The water-supply of Charlottesville and the University is pure and abundant, and the sewerage system of the University is well-nigh perfect. Nor was there anything in the *soil* to which it could be attributed. Indeed, the epidemic prevailed just as extensively three or four miles out of town, where the surroundings were totally different, as it did in the town or the University.

4. Diagnostic Features.—The striking features of the epidemic here were: (*a*) The suddenness of the onset. (*b*) The seat and character of the pain. (*c*) The short duration of the fever. I have already mentioned these features sufficiently in detail. The disease which, it seems to me to resemble most, is dengue; but it differs from it in certain striking particulars, as shown by the following comparative tables:

In Dengue.	*In the Epidemic under Consideration.*
Violent pain in the limbs.	Rarely pain in the limbs.
Elderly people, as well as children, commonly affected.	Confined to children and young adults.
Joints are inflamed.	Joints not inflamed.
There is an eruption.	No eruption.

If Dickson's statement be correct, that one attack of dengue is protective against future attacks, we have a further evidence that the epidemic described in this paper was not dengue, in the fact that four at least of the patients to whom I have alluded had dengue in Texas a year or two ago. The father of these children—a very observant man—who not only nursed his children through their attacks of dengue, but had the disease himself, assures me that while the epidemic which I have described resembled dengue in some respects, it was in others totally dissimilar and was clearly a different affection. The breakbone fever which prevailed in Charleston, S. C., in 1880, resembled the epidemic here in some respects, but there were striking differences; for example, Forrest states[1] that "a symptom present in the majority of cases was a cutaneous eruption;" in not one of the cases which I saw or of which I heard during the whole epidemic was there any eruption present; nor was there in the Charleston epidemic the same uniformity as to the *seat* of pain as was observed here in nearly all of the cases; there was, it is true, in many of my cases, pain elsewhere than in the cardiac region, but "the pain," as the patients themselves called it, was located there, and that elsewhere was comparatively slight. Then in the Charleston epidemic "there was no distinction of age, etc.;" I did not see or hear of a case here in a person over twenty-five years of age. No one can read the accounts of dengue as it has prevailed in different places and at different times, however, without being struck with the great difference in the symptoms in the different epidemics. It seems to me possible therefore, but far from probable, that the epidemic which prevailed here in June last was dengue of which the symptoms were modified by climate.

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[1] American Journal of the Medical Sciences, April, 1881.

5. DURATION AND PROGNOSIS.—The duration of the disease was very variable; in some cases a single paroxysm of twelve hours' duration would end the trouble, while in others it lasted for days, and in two cases as long as three weeks; the pain and fever recurring daily and usually at the same hour of the day. I have already stated that there was no history of malaria in any of these cases. There was not a single fatal case, but several of the patients whom I saw were left in a condition of extreme prostration for two or three weeks after all fever had ceased, and they would suffer pain in the affected side whenever any unusual exertion was attempted.

6. TREATMENT.—The indications of treatment in every instance, so far as the symptoms were concerned, were plain enough—to relieve pain, to reduce temperature, and to prevent a recurrence of the paroxysm.

For the relief of pain antipyrine was usually employed, in doses of from two to twenty grains, according to the age and weight of the patient, and the dose was repeated every two hours till the pain was relieved. It rarely failed to give relief within half an hour from the time of administration of the first dose. In a few instances morphia was administered hypodermatically, and opiates, generally in the form of paregoric, were given to young children. One advantage possessed by antipyrine over the other remedies which were given for the relief of pain, was that it fulfilled the second indication, reduced the temperature; furthermore, it did not constipate or cause nausea as opiates often do. In children a full bath, as hot as the little patient could bear, usually afforded prompt relief, but other external applications, such as poultices, mustard plasters, or other counter-irritants, did little or no good.

For the slight constipation, calomel was usually employed, and after the paroxysm subsided or was relieved by the remedies which I have just mentioned, quinine was given. The dose given to a man eighteen or twenty years of age, was five grains every two hours till twenty or occasionally thirty grains had been taken; to children smaller quantities were, of course, administered. I have already mentioned several times the pain upon motion or exercise which persisted in many cases for days or weeks, in a few instances I gave salicylate of sodium with the hope of relieving this annoyance, but there was no appreciable effect.

Antipyrine to relieve pain, calomel to relieve the constipation, and quinine to prevent a recurrence of the paroxysm, were the measures which gave the best results, and late in the epidemic the patients would often treat themselves with these remedies without sending for a physician.